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| APPLICATION NO.                              | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/709,613                                   | 05/18/2004  | Timo Schirmer        | GEMS8081.215        | 3612             |
| 27061                                        | 7590        | 10/05/2005           | EXAMINER            |                  |
| ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (GEMS) |             |                      | FETZNER, TIFFANY A  |                  |
| 14135 NORTH CEDARBURG ROAD                   |             |                      | ART UNIT            |                  |
| MEQUON, WI 53097                             |             |                      | PAPER NUMBER        |                  |
|                                              |             |                      | 2859                |                  |

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|                              |                    |  |                |  |
|------------------------------|--------------------|--|----------------|--|
| <b>Office Action Summary</b> | Application No.    |  | Applicant(s)   |  |
|                              | 10/709,613         |  | SCHIRMER, TIMO |  |
|                              | Examiner           |  | Art Unit       |  |
|                              | Tiffany A. Fetzner |  | 2859           |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 18 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-20** are rejected under **35 U.S.C. 102(e)** as being anticipated by **Frigo et al.**, US patent 6,891,371 B1 issued May 10<sup>th</sup> 2005, filed July 9<sup>th</sup> 2003.

3. With respect to **Claim 1**, **Frigo et al.**, teaches and shows “A method of MR spectroscopy (MRS)” [See abstract] “comprising the steps of: acquiring a reference signal with a body coil”; [See RF body coil 56 of figure 1, col. 5 line 30 through col. 6 line 67; col. 2 lines 1-15; col. 2 line 41 through col. 3 line 5] “acquiring metabolite signals with a plurality of receive coils,” [See col. 1 lines 7-11; col. 1 lines 53-67; col. 2 lines 42 through col. 3 line 16; col. 5 line 4 through col. 7 line 42.] “combining the metabolite signals to form a single MRS spectrum,” [See figure 2 col. 7 lines 1-42; and col. 1 line 7 through col. 11 line 47, since this limitation is a main teaching of the entire reference.] “and scaling the single MRS spectrum as a function of intensity of the reference signal. [See col. 5 line 30 through col. 11 line 47 where component  $a_{scale}$  is a constant scaling factor representing the ratio of the largest magnitudes of frequency components, and is drawn from the reference data]

4. With respect to **Claim 2**, **Frigo et al.**, teaches that “the step of acquiring the reference signal includes the step of acquiring signal from unsuppressed (i.e. non-suppressed) water with a uniform **B<sub>1</sub>** body coil.” [See whole-body RF coil 56; col. 5 line 30 through col. 6 line 6] The same reasons for rejection, that apply to **claim 1** also apply to **claim 2** and need not be reiterated.

5. With respect to **Claim 3, Frigo et al.**, teaches and shows that “the plurality of coils is” a “phased array coil arrangement.” [See figure 1, array processor component 68 (i.e. this component processes input from the multiple reception coils (i.e. the multi-coil array) of the **Frigo et al.**, reference; See Figure 2 which shows multiple receivers combined as a single unit feature 132; col. 6 lines 7-67 where the number of receiver coils from which signals are acquired is “L” and the phase corrections, weightings scalings, and normalizations whose application to the received signal data result in the multiple receiver coil array intrinsically being a “phased array coil arrangement.” [See figures 1, 2, col. 4 line 29 through col. 11 line 47; col. 1 line 7 through col. 3 line 16; and the abstract which teaches “multi-coil” (i.e., a coil array), “multi-channel” (i.e. each channel by definition has a different defined phase) “simultaneous acquisition” (i.e. parallel signal acquisition) which is also known as “parallel phased array” acquisition in the MRI/NMR/MRS art.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 3** and need not be reiterated.

6. With respect to **Claim 4, Frigo et al.**, teaches and shows a “step of carrying out a pre-scan prior to acquisition of the reference signal.” [See figure 2 component 110, which occurs before step 114 where the reference data is acquired; col. 5 line 4 through col. 7 line 22] The same reasons for rejection, that apply to **claim 1** also apply to **claim 4** and need not be reiterated.

7. With respect to **Claim 5, Frigo et al.**, teaches “determining at least one of shimming, transmit frequency, receive coil gains, and transmitter gain from the pre-scan.” [See col. 5 lines 4-29; and col. 9 line 36 through col. 11 line 47; in combination with component 110 of figure 2.] The same reasons for rejection, that apply to **claims 1, 4** also apply to **claim 5** and need not be reiterated.

8. With respect to **Claim 6, Frigo et al.**, teaches and shows that “the step of scaling includes determining a ratio of reference signal amplitude to single MRS spectrum amplitude and modifying the single MRS spectrum by the ratio.” [See figure 2, col. 5 line 5 through col. 10 line 67; equations 1 through 26.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 6** and need not be reiterated.

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9. With respect to **Claim 7, Frigo et al.**, teaches and shows “using a phased-array volume coil arrangement for a spectroscopy examination” [See the **rejection of claim 3**, which need not be reiterated] “in conjunction with an MR imaging examination.” [See the abstract, col. 2 line 41 through col. 3 line 16.] The same reasons for rejection, that apply to **claims 1, 3** also apply to **claim 7** and need not be reiterated.

10. With respect to **Claim 8, Frigo et al.**, teaches and shows “An MRS apparatus comprising: a magnetic resonance imaging (MRI) system having a plurality of gradient coils positioned about a bore of a magnet to impress a polarizing magnetic field and an RF transceiver system and an RF switch controlled by a pulse module to transmit RF signals to an RF coil assembly to acquire MRS data, the RF coil assembly having phased array coils and a body coil; and a computer programmed to scale a composite signal of metabolite signals acquired with the phased array coils” [See the rejection of **claim 3**] “based on a reference signal acquired with the body coil.” [See figures 1 and 2; equations 1 through 26; the abstract; and the teachings of col. 1 line 7 through col. 11 line 47] The same reasons for rejection, that apply to **claims 1, 3** also apply to **claim 8** and need not be reiterated

11. With respect to **Claim 9, Frigo et al.**, teaches and shows that “the computer is further programmed to determine an intensity of the reference signal and an intensity of the composite signal, and determine an intensity ratio therefrom.” [See figures 2, 3, and 4; col. 3 lines 3-16; col. 3 line 44 through col. 11 line 17 where the ratios of the spectral peaks, which represent the intensity/amplitude/height of a specific metabolite are shown in 2D/3D] The same reasons for rejection, that apply to **claim 8** also apply to **claim 9** and need not be reiterated.

12. With respect to **Claim 10, Frigo et al.**, teaches and shows that “the computer is further programmed to modify the composite signal by the intensity ratio.” [See figure 2, col. 5 line 4 through col. 11 line 47] The same reasons for rejection, that apply to **claims 8, 9** also apply to **claim 10** and need not be reiterated.

13. With respect to **Claim 11, Frigo et al.**, teaches and shows that “the computer is further programmed to scale the composite signal such that signal intensity of water as determined from MRS data acquired by the whole body coil equals signal intensity of

water as determined from MRS data acquired by the phased array coils" [See the rejection of **claim 3**] and represented in the composite signal." [See figures 1 through 4 in combination with the teachings of col. 5 line 4 through col. 11 line 47] The same reasons for rejection, that apply to **claims 1, 3, 8** also apply to **claim 11** and need not be reiterated.

14. With respect to **Claim 12, Frigo et al.**, teaches and shows that "the computer is further programmed to combine metabolite signals respectively acquired from each coil of the phased array coils" [See the rejection of **claim 3**] "to form the composite signal and combine the metabolite signals in an SNR increasing manner." [See col. 5 line 52 through col. 6 line 6] The same reasons for rejection, that apply to **claims 1, 3, 8** also apply to **claim 12** and need not be reiterated.

15. With respect to **Claim 13, Frigo et al.**, teaches and shows that "the computer is further programmed to generate and display an MRS spectrum from the scaled composite signal." [See figures 3, 4, in combination with figures 1 and 2; col. 4 lines 46-60; col. 9 line 36 through col. 11 line 47] The same reasons for rejection, that apply to **claim 8** also apply to **claim 13** and need not be reiterated.

16. With respect to **Claim 14, Frigo et al.**, teaches and shows with respect to Figure 4, that "the computer is further programmed to display the MRS spectrum for a single voxel of a VOI" (i.e. volume of interest) "from which the metabolite signals are acquired." [See col. 1 lines 34-67; col. 7 lines 1-22 and figure 4 where the spectrum for a volume of interest, is shown for different voxels.] The same reasons for rejection, that apply to **claims 8, 13** also apply to **claim 14** and need not be reiterated.

17. With respect to **Claim 15, Frigo et al.**, teaches and shows "A computer readable storage medium having a computer program stored thereon to perform an MRS exam and representing a set of instructions that when executed by a computer causes the computer to: acquire unsuppressed MRS water signal with a transmit and receiver coil; acquire MRS metabolite signals from a plurality of receive coils; combine the MRS metabolite signals to form an MRS composite spectrum; and scale the MRS composite spectrum to an intensity of the unsuppressed MRS water signal. [See figures 1 through 4; col. 3 line 11 through col. 11 line 47; and col. 2 line 41 through col. 3 line 10.] The

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same reasons for rejection, that apply to **claims 1, 8** also apply to **claim 15** and need not be reiterated.

18. With respect to **Claim 16, Frigo et al.**, teaches and shows that “the computer is caused to scale the MRS composite signal such that the amplitude of the MRS water signal equals the amplitude of a water signal in the MRS composite spectrum.” [See figures 1 through 4; col. 3 line 11 through col. 11 line 47; and col. 2 line 41 through col. 3 line 10.] The same reasons for rejection, that apply to **claim 15** also apply to **claim 16** and need not be reiterated.

19. With respect to **Claim 17, Frigo et al.**, teaches and shows that “the plurality of coils is a phased-array volume coil arrangement.” [See the rejection of figure 3, and the fact that imaging coils of figure 1 collect signal data from a three-dimensional volume.] The same reasons for rejection, that apply to **claims 1, 3, 8, 15** also apply to **claim 17** and need not be reiterated.

20. With respect to **Claim 18, Frigo et al.**, teaches and shows that “the computer is further caused to carry out a pre-scan prior to acquisition of the reference signal.” [See figure 2 component 110, which occurs before step 114 where the reference data is acquired; col. 5 line 4 through col. 7 line 22] The same reasons for rejection, that apply to **claims 1, 4, 8, 15** also apply to **claim 18** and need not be reiterated.

21. With respect to **Claim 19, Frigo et al.**, teaches and shows that “the computer is further caused to determine at least one of shimming, transmit frequency, receiver gain, and transmitter gain from the pre-scan.” [See col. 5 lines 4-29; and col. 9 line 36 through col. 11 line 47; in combination with component 110 of figure 2.] The same reasons for rejection, that apply to **claims 1, 5, 8, 15** also apply to **claim 19** and need not be reiterated.

22. With respect to **Claim 20, Frigo et al.**, teaches and shows that “the computer is further caused to acquire data of a spectroscopy examination using a phased-array volume coil arrangement” [See the rejections of claims 3, and 17 above which need not be reiterated] “in conjunction with an MR imaging examination.” [See the abstract, col. 2 line 41 through col. 3 line 16.] The same reasons for rejection, that apply to **claims 1, 7, 8, 15** also apply to **claim 20** and need not be reiterated.

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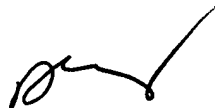
### Conclusion

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.



TAF  
September 29, 2005



Diego Gutierrez  
Supervisory Patent Examiner  
Technology Center 2800